

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE
BOARD OF PATENT APPEALS AND INTERFERENCES**

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Applicant	:	Douglas W. Wager et al.		
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Title	:	COMPUTERIZED SYSTEM AND METHOD FOR DETERMINING WORK IN A HEALTHCARE ENVIRONMENT		
Group Art Unit	:	3686		
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APPELLANT'S APPEAL BRIEF

This is an Appeal from a Non-final Office Action dated August 31, 2010, rejecting claims 1-2, 5-7, 9-24, and 39-49. These claims have been at least twice rejected. Appellants, having filed a Notice of Appeal (filed November 30, 2010) within the time period provided under § 1.134 accompanied by the fee set forth in 37 C.F.R. § 41.20(b)(1), do hereby submit this Appeal Brief prior to the two-month deadline, along with the fee set forth in §41.20(b)(2). The Commissioner is hereby authorized to charge any additional fee that may be due, or credit any overpayment, to Deposit Account No. 19-2112, referencing Attorney Docket No. CRNI.108473.

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I. REAL PARTY IN INTEREST

The real party in interest is Cerner Innovation, Inc., a corporation of the State of Delaware, United States of America.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF CLAIMS

Claims 1-2, 5-7, 9-24, and 39-49 are pending, and the rejection of each of those claims is being appealed.

IV. STATUS OF AMENDMENTS

No amendments have been filed subsequent to the Non-Final Office Action dated August 31, 2010.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The instant Application includes five independent claims: 1, 12, 39, 40, and 41. The present invention is defined by the claims, but summarily, embodiments of the invention are generally directed to determining the amount of work for patients in a healthcare environment. *See e.g., Specification*, p. 1, lines 10-11¹ (§ [0003]). Determining a patient classification or workload typically requires manual entry of information. *Id.* at p. 2, lines 12-15 (§ [0006]). This process is not integrated with the primary clinical information system, and therefore does not capture data during the planning and documenting of care in the primary clinical information system. *Id.* at p. 2 lines 14-16 (§ [0006]). This process is time-consuming and prone to human error. *Id.* at p. 3, lines 1-2 (§ [0007]).

¹ Please note that all references to the Specification refer to the Specification of the present application as filed on October 6, 2003.

Accordingly, embodiments of the present invention, among other things, provide methods and systems for calculating the amount of work for a particular patient population. *Id.* at p. 13, lines 19-20 (§ [0047]).

Claim 1 (first of five independent claims)

Claim 1 is directed to a method for determining an amount of work provided by a health care provider for a particular patient. *See, e.g., Specification*, p. 15, line 14 (§ [0052]). The method recites obtaining patient data for the particular patient directly from a primary clinical information system. *Id.* at p. 15, lines 17-18 (§ [0052]). The method also recites determining a type of patient population that the particular patient is a member of. *Id.* at p. 14, lines 7-9 (§ [0048]). The method further recites accessing work factors for the type of patient population. *Id.* at p. 16, lines 1-3 (§ [0053]). The method still further recites comparing the data for the particular patient to the work factors to determine which factors are satisfied. *Id.* at p. 16, lines 4-8 (§ [0054]). The method recites accessing a weighted value for each satisfied work factor. *Id.* at p. 16, lines 9-17 (§ [0055]). The method further recites assigning each satisfied work factor with a weighted score. *Id.* at p. 16, lines 9-17 (§ [0055]). The method also recites calculating, with a computer processor, a work score for the particular patient using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient. *Id.* at p. 17, lines 3-6 (§ [0057]). The method further recites storing the particular patient's work score. *Id.* at p. 17, lines 16-17 (§ [0060]); p. 12, lines 5-12 (§ [0042]).

Claim 12 (second of five independent claims)

Claim 12 is directed to one or more computer-storage media having computer-executable instructions embodied thereon, that when executed by a computing system having a processor and memory, cause the computing system to perform a method. *See, e.g., Specification*, p. 12, lines 5-12 (§ [0042]). The method recites obtaining patient data for one or

more patients in a patient population directly from a primary clinical information system. *Id.* at p. 15, lines 17-18 (§ [0052]). The method also recites determining a type of patient population that each of the one or more patients is a member of. *Id.* at p. 14, lines 7-9 (§ [0048]). The method further recites accessing work factors for the type of patient population. *Id.* at p. 16, lines 1-3 (§ [0053]). The method still further recites comparing the patient data for each of the one or more patients to the work factors to determine which factors are satisfied. *Id.* at p. 16, lines 4-8 (§ [0054]). The method also recites accessing a weighted value for each satisfied work factor. *Id.* at p. 16, lines 9-17 (§ [0055]). The method recites assigning each satisfied work factor with a weighted score. *Id.* at p. 16, lines 9-17 (§ [0055]). The method further recites calculating, with the processor, a work score for each of the one or more patients in the patient population using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve each of the one or more patients. *Id.* at p. 17, lines 3-6 (§ [0057]). The method still further recites storing one or more work scores for the one or more patients in the patient population. *Id.* at p. 17, lines 16-17 (§ [0060]); p. 12, lines 5-12 (§ [0042]). The method also recites calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population. *Id.* at p. 19, lines 6-8 (§ [0063]).

Claim 39 (third of five independent claims)

Claim 39 is directed to one or more recordable computer-storage media having computer-executable instructions embodied thereon that when executed by a computing system having a processor and memory, cause the computing system to perform a method. *See, e.g., Specification*, p. 12, lines 5-12 (§ [0042]). The method recites obtaining patient data for particular patient at a first point in time directly from a primary clinical information system. *Id.*

at p. 15, lines 17-18 (§ [0052]). The method further recites determining a type of patient population that the particular patient is a member of. *Id.* at p. 14, lines 7-9 (§ [0048]). The method still further recites accessing work factors for the type of patient population. *Id.* at p. 16, lines 1-3 (§ [0053]). The method also recites comparing the patient data for the particular patient to work factors to determine which work factors are satisfied. *Id.* at p. 16, lines 4-8 (§ [0054]). The method further recites accessing weighted values for each satisfied work factor. *Id.* at p. 16, lines 9-17 (§ [0055]). The method still further recites assigning each satisfied work factor with a weighted score. *Id.* at p. 16, lines 9-17 (§ [0055]). The method also recites utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time. *Id.* at p. 17, lines 3-6 (§ 0057). The method further recites storing the first instance of a work score. *Id.* at p. 17, lines 16-17 (§ [0060]); p. 12, lines 5-12 (§ [0042]). The method still further recites obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system. *Id.* at p. 15, lines 17-18 (§ [0052]). The method recites determining a type of patient population that the patient is a member of. *Id.* at p. 14, lines 7-9 (§ [0048]). The method also recites accessing work factors for the type of patient population. *Id.* at p. 16, lines 1-3 (§ [0053]). The method further recites comparing the patient data for the particular patient to work factors to determine which work factors are satisfied. *Id.* at p. 16, lines 4-8 (§ [0054]). The method still further recites accessing weighted values for each satisfied work factor. *Id.* at p. 16, lines 9-17 (§ [0055]). The method also recites assigning each satisfied work factor with a weighted score. *Id.* at p. 16, lines 9-17 (§ [0055]). The method further recites utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work

factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time. *Id.* at p. 17, lines 3-6 (¶ [0057]). The method still further recites storing the second instance of a work score. *Id.* at p. 17, lines 16-17 (¶ [0060]); p. 12, lines 5-12 (¶ [0042]). The method also recites trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system. *Id.* at p. 20, line 3 (¶ [0064]).

Claim 40 (fourth of five independent claims)

Claim 40 is directed to a computer-implemented method for determining the amount of healthcare provider work for a population of patients. *See e.g., Specification*, p. 1, lines 10-11 (¶ [0003]). The method recites calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system, wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider. *Id.* at p. 17, lines 3-6 (¶ [0057]). The method also recites storing the work score for each patient. *Id.* at p. 17, lines 16-17 (¶ [0060]); p. 12, lines 5-12 (¶ [0042]). The method further recites calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population. *Id.* at p. 19, lines 6-8 (¶ [0063]).

Claim 41 (fifth of five independent claims)

Claim 41 is directed to a computerized system for optimizing personnel planning in a healthcare organization. *See, e.g., Specification*, p. 3, lines 16-17 (¶ [0010]). The system includes a work calculation module for calculating a work score for one or more patients. *Id.* at p.6, lines 1-3 (¶ [0023]). The system also includes a staff scheduling and staffing module for receiving input from the work calculation module about prospective workload and identifying

healthcare personnel positions to be filled. *Id.* at p. 6, lines 17-19 (§ [0025]). The system further includes a role management module for managing the roles and information regarding personnel. *Id.* at p. 7, lines 14-19 (§ [0027]). The system further includes a workforce outcomes module for determining how effectively healthcare personnel have been used. *Id.* at p. 8, lines 3-5 (§ [0029]). The system still further includes a demand forecast module for forecasting the volume and type of patients who will present, communicating information regarding a forecasted demand generated by the demand forecast module to the work calculation module, and communicating information to the staff scheduling and staffing module to help determine anticipated clinical demand. *Id.* at p. 8, lines 12-21 (§ [0030]). The system also includes a resource dashboard module for receiving information regarding staff scheduling from the staff scheduling and staffing module, receiving work calculations for the patient population from the work calculation module, and displaying information regarding personnel and patients. *Id.* at p. 10, lines 6-10 (§ [0036]).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A) Claims 1-2, 5, 7-17, 19-24, and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,061,657 to Whiting-O'Keefe (hereinafter "Whiting-O'Keefe"), in view of U.S. Patent No. 5,809,477 to Pollack (hereinafter "Pollack"), in view of U.S. Patent No. 7,155,399 to Andre et al. (hereinafter "Andre"), in further view of U.S. Publication No. 2003/0101076 to Zaleski (hereinafter "Zaleski").

B) Claims 6, 18, 39, and 49 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O'Keefe in view of Pollack, in view of Andre, in view of Zaleski, in further view of U.S. Patent No. 6,193,654 to Richardson et al. (hereinafter "Richardson").

C) Claim 41 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view Pollack, in further view of Zaleski.

D) Claims 42 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in further view of U.S. Patent No. 7,076,436 to Ross, Jr. et al. (hereinafter “Ross”).

E) Claims 44 and 45 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in further view of Richardson.

F) Claims 46 and 47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in view of Richardson, in further view of Pollack.

G) Claim 48 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in view of Richardson, in view of Pollack, in further view of U.S. Publication No. 2003/0050797 to Brandt et al. (hereinafter “Brandt”).

Appellants respectfully traverse these rejections.

VII. ARGUMENT

A) Summary of the Applicable Authority

Initially, Appellants note that Title 35 U.S.C. § 103(a) declares that a patent shall not issue when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” In *Graham v. John Deere*, the Supreme Court counseled that an obviousness determination is made by identifying: the scope and content of the prior art; the level of ordinary skill in the prior art;

the differences between the claimed invention and prior art references; and secondary considerations. *See, Graham v. John Deere Co.*, 383 U.S. 1 (1966).

“The Office bears the initial burden of factually supporting a *prima facie* conclusion of obviousness.” MPEP § 2142. If the Office does not produce a *prima facie* case, the Appellant is under no obligation to submit evidence of nonobviousness. *Id.* To reach a proper determination of obviousness, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. *Id.* In view of all factual information, the Office must then determine whether the claimed invention "as a whole" would have been obvious at that time to that person. *Id.* (emphasis added). Knowledge of Appellant's disclosure must be put aside in reaching this determination. *Id.* Impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. *Id.*

The key to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. MPEP § 2142 citing *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (U.S. 2007) (emphasis added), which notes that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. Moreover, the Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." MPEP § 2142 (emphasis added) (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). *See also KSR*, 127 S. Ct. at 1741 (quoting Federal Circuit statement with approval).

Appellants respectfully disagree with the factual findings made by the Office. As explained in more detail below, contrary to assertions made by the Office, several elements of

the claimed invention are not described in the combination of references. Accordingly, Appellants respectfully traverse the rejection, as hereinafter set forth.

B) The rejection of claims 1-2, 5, 7-17, 19-24, and 40 under 35 U.S.C. §103(a) as being unpatentable over Whiting-O’Keefe, in view of Pollack, in view of Andre, in view of Zaleski should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.

1) Has the Office established a *prima facie* case of obviousness for claims 1-2, 5, and 7-11, when the combination of cited references fail to teach or suggest at least one feature of independent claim 1?

The Office has not established a *prima facie* case of obviousness for claim 1 because the combination of cited references does not teach at least one feature of claim 1. Whiting-O’Keefe was cited as disclosing “calculating, with a computer processor,...the particular patient,” while Pollack was cited as disclosing “a work score for...using the satisfied work factors.” Whiting-O’Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest “calculating, with a computer processor, a work score for the particular patient using the satisfied work factors,” as recited in claim 1. The references fail to disclose a *work score calculation* for a *particular patient* using *satisfied work factors*, as discussed in detail below.

As previously indicated in the Summary of Claimed Subject Matter, independent claim 1 recites a method for determining an amount of work provided by a health care provider for a particular patient. The method includes “obtaining patient data for the particular patient directly from a primary clinical information system,” “determining a type of patient population that the particular patient is a member of,” “accessing work factors for the type of patient population,” “comparing the data for the particular patient to the work factors to determine which factors are satisfied,” “accessing a weighted value for each satisfied work factor,” “assigning each satisfied work factor with a weighted score,” “calculating, with a computer

processor, a work score for the particular patient using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient,” and “storing the particular patient's work score.”

Applicants respectfully submit that the calculation of regression coefficients in Whiting-O’Keefe does not teach or suggest a work score calculation for “the particular patient,” as recited in claim 1. The work factors of claim 1 relate to the *particular patient population to which the patient belongs*, while Whiting-O’Keefe estimates “charges” for “episodes of care” that are *not patient-specific*. *Whiting-O’Keefe* at col. 7, ll. 53-54. Satisfied work factors for one patient are different from the satisfied work factors for another patient even though the patients, in some instances, may be in the same patient population. For example, a patient in the intensive care unit (ICU) is associated with a catalog of particular work factors related to treating ICU patients. *See Specification* at ¶ [0049]. Patient data is compared to the work factors to assign weights to the satisfied factors. *Id.* at ¶¶ [0054]-[0056]. A work score is then generated for a particular patient based on the weights assigned to the satisfied work factors for the particular patient. *Id.* at ¶ [0057]. Because weights are assigned to the satisfied work factors, a work score calculated for a particular patient according to claim 1 does not correlate to the generic charges estimates of the Whiting-O’Keefe reference for a patient population. In other words, weighted work factors based on a particular patient’s data do not equate to estimated charges for a service for a patient population that is not patient-specific. Further, a triggered work factor may be adjusted based on the particular patient, taking into account the relevant work factors, and the associated characteristics of the particular patient being treated. *See Specification* at ¶ [0055]. For example, drawing blood from any type of patient may generate a charge of \$20 each time the

task is ordered under Whiting-O'Keefe, but in the above-identified application, a higher-weighted work score may be generated to draw blood from an infant than from an adult patient.

Whiting-O'Keefe was also cited as determining a type of patient population that the particular patient is a member of. Applicants respectfully submit that Whiting-O'Keefe fails to teach or suggest such a determination, as Whiting-O'Keefe references "healthcare encounter records for a large population of patients," to "calculate the regression coefficients." *Whiting-O'Keefe* at Col. 8; Fig. 3. This calculation of regression coefficients is not patient-specific. In fact, Whiting-O'Keefe admits that its system does not consider the data of a particular patient in question because it evaluates the charges to treat a specific patient or group of patients "who will usually *not* be included in the population from which the encounter records are taken." *Id.* at Col. 8, ll. 21-24 (emphasis added). As such, Whiting-O'Keefe teaches away from a work score calculation that uses work factors satisfied by actual patient data.

Applicants respectfully submit that Pollack fails to disclose "accessing work factors for the type of patient population," and "work score factors," as cited in the Non-Final Office Action dated August 31, 2010. *Office Action* at p. 4. It is respectfully submitted that Pollack does not cure the deficiencies of Whiting-O'Keefe. While the Pollack reference discloses "obtaining data," for patients, the reference is directed towards evaluation of patient illness as it relates to the length of patient stay and patient bed availability. *Pollack* at Col. 3, lines 27-46. While these determinations are driven by "automated patient information," the Pollack reference still does not teach or suggest the use of a "primary clinical information system" which relates to the "planning and documenting of care." *See Specification* at ¶¶ [0006] and [0007].

Additionally, Applicants maintain that Pollack fails to teach or suggest the limitations of “comparing the data for the particular patient to the work factors to determine which factors are satisfied,” “accessing a weighted value for each satisfied work factor” and “assigning each satisfied work factor with a weighted score,” recited in claim 1. Calculating a work score in claim 1 is significantly different than determining bed availability in Pollack (and estimating charges for patient care in Whiting-O’Keefe.) Pollack determines the expected length of stay of a patient, and the probability of death of patients. *See Pollack* at Figs. 5-6. This is in contrast to claim 1, which is directed to determining a work score for a particular patient by comparing patient data to work factors to determine which work factors are satisfied, accessing weighted values for each satisfied work factor, and assigning each satisfied work factor with a weighted score.

Additionally, Pollack does not teach or suggest calculating a work score for a particular patient *using satisfied work factors*. Pollack quantifies the severity of a patient’s condition as it relates to the *length of patient stay and patient bed availability*, while the work score of claim 1 indicates a quantity of personnel hours anticipated to serve the particular patient. *Id.* at Col. 3, ll. 27-46. Patient stays and bed availability, although pertaining to patients, does not teach or suggest the calculation of a work score for a particular patient that is based on satisfied work factors.

Applicants respectfully submit that Andre and Zaleski fail to cure the deficiencies of Whiting-O’Keefe and Pollack noted above and the claims are allowable on that point alone. Zaleski is generally directed to scheduling and allocating healthcare staff to where they are most needed. *Zaleski* at ¶ [00007]. Applicants further note that Andre fails to teach or suggest the limitation of “wherein the work score indicates a quantity of personnel hours anticipated to serve

the particular patient.” By contrast, Andre discloses a score generated and assigned by a schedule evaluator based on employee schedule changes. *See Andre* at Col. 5, ll. 35-39. The schedule generated by addition or removal of a patient depends upon the work performed by the changed employee. *Id.* at ll. 49-58. As such, the amount of work performed by an employee added or removed from a schedule in Andre, is distinct from a work score based on the quantity of personnel hours anticipated to serve a particular patient in claim 1. For example, multiple personnel may be expected to contribute various numbers of hours to treatment of a particular patient. Those varying numbers of hours may satisfy various work factors for that patient, and in turn be used to calculate the work score that “indicates a quantity of personnel hours anticipated to serve the particular patient.” Because calculating a work score in claim 1 is based on *satisfying work factors* for a particular patient, it involves more than simply quantifying a change in total work performed by a schedule change of one employee to another, as in Andre.

Thus, Applicants respectfully submit that Whiting-O’Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 1. Therefore, a *prima facie* case of obviousness has not been established for independent claim 1. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. § 103(a). Claim 1 is believed to be in condition for allowance and such favorable action is respectfully requested.

Each of claims 2, 5, and 7-11 depends either directly or indirectly from independent claim 1. As such, it is respectfully submitted that Whiting-O’Keefe, Pollack, Andre and Zaleski fail to teach or suggest, either expressly or inherently, each and every element of these claims for at least the above-cited reasons. Applicants respectfully request withdrawal of

the 35 U.S.C. § 103(a) rejection of these claims as well. Each of claims 2, 5, and 7-11 is believed to be in condition for allowance and such favorable action is respectfully requested.

- 2) Has the Office established a *prima facie* case of obviousness for claims 12-17 and 19-24 when the combination of cited references fail to teach or suggest at least one feature of independent claim 12?

The Office has not established a *prima facie* case of obviousness for claim 12 because the combination of cited references does not teach at least one feature of claim 12. Each of the Whiting-O'Keefe, Pollack, Andre, and Zaleski references fail to teach or suggest "calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population," and "calculating, with the processor, a work score for each of the one or more patients in the patient population using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve each of the one or more patients," as recited in claim 12.

As previously indicated in the Summary of Claimed Subject Matter, independent claim 12 recites one or more computer-storage media having computer-executable instructions embodied thereon, that when executed by a computing system having a processor and memory, cause the computing system to perform a method. The method includes "obtaining patient data for one or more patients in a patient population directly from a primary clinical information system," "determining a type of patient population that each of the one or more patients are a member of," "accessing work factors for the type of patient population," "comparing the patient data for each of the one or more patients to the work factors to determine which factors are satisfied," "accessing a weighted value for each satisfied work factor," "assigning each satisfied work factor with a weighted score," "calculating, with the processor, a work score for each of the one or more patients in the patient population using the satisfied work factors, wherein the work

score indicates a quantity of personnel hours anticipated to serve each of the one or more patients," "storing one or more work scores for the one or more patients in the patient population," and "calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population.

Independent claim 12 recites features similar to those discussed above for claim 1 and is patentable over the art of record for at least the same reasons. Additionally, the Office cites Pollack as disclosing "calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population." Pollack is generally directed to retrieving automated patient information to estimate bed availability for patients awaiting admission by evaluating the severity of the illnesses of patients already in a particular population. *See Pollack* Col. 4, Lines 44-46, Col. 3, Lines 28-30, Col. 11, Lines 29-31, and Col. 17, Lines 66-67. As previously noted, Pollack does not teach or suggest the calculating of a work score, as Pollack is merely focused on bed availability and length of patient stay. Although Pollack "allocat[es] hospital beds to patients...based on said number of hospital beds in use," this type of availability-based scheduling is distinct from using a *work score* (that reflects personnel hours to serve a patient in a patient population) to calculate staffing needs. *Id.* at Col. 20, ll. 39-40. Pollack does not calculate "staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population," as recited in claim 12.

Thus, Applicants respectfully submit that Whiting-O'Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 12. Therefore, a *prima facie* case of obviousness has not been established for independent claim 12. Accordingly, Applicants respectfully request withdrawal of the rejection

of claim 12 under 35 U.S.C. § 103(a). Claim 12 is believed to be in condition for allowance and such favorable action is respectfully requested.

3) Has the Office established a *prima facie* case of obviousness for claim 40 when the combination of cited references fail to teach or suggest at least one feature of independent claim 40?

The Office has not established a *prima facie* case of obviousness for claim 40 because the combination of cited references does not teach at least one feature of claim 40. Each of the Whiting-O’Keefe, Pollack, Andre, and Zaleski references fail to teach or suggest “calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population,” and “calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system, wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider,” as recited in claim 40.

As previously indicated in the Summary of Claimed Subject Matter, independent claim 40 recites a computer-implemented method for determining the amount of healthcare provider work for a population of patients. The method includes “calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system, wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider,” “storing the work score for each patient,” and “calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population.”

Whiting-O’Keefe is cited in the outstanding Office Action as disclosing “calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical information system.” *See Office Action*

pp. 14-15. As previously discussed, Whiting-O'Keefe is generally directed to estimating "charges" for "episodes of care for identified primary and collateral illnesses" that depend on a table of regression coefficients calculated from healthcare encounter records. *See Whiting-O'Keefe* at Col. 7, lines 53-54, Col. 8, lines 1-7. It is respectfully submitted that estimating "charges" for patient care based on a table of regression coefficients is distinct from calculating a "work score" for a particular patient based on information obtained from a primary clinical information system. Further, such charge estimation is distinct from the work score calculation, where "the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider," as recited in claim 40.

As acknowledged in the Non-Final Office Action dated August 31, 2010, Whiting-O'Keefe fails to disclose "calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population." *See Office Action* p. 15. For this, Pollack is relied on. As previously discussed, Pollack is generally directed to quantifying the severity of a patient's condition, and expected length of stay, through retrieval of automated patient information. *See Pollack* at col. 4 lines 44-46, col. 11, Lines 29-31, col. 17, Lines 66-67. Pollack utilizes this information to allocate available beds to incoming patients based on the severity of the illness. *Id.* at col. 3, lines 28-30. It is respectfully submitted that Pollack does not disclose "calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population," as recited in independent claim 40. While the Pollack reference discloses the coordination of available beds for patients, it does not teach or suggest calculating "staffing needs" for a patient population based on the individual "work scores" obtained for each patient in the patient population.

As acknowledged in the outstanding Office Action, Whiting-O'Keefe and Pollack fail to disclose "wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider." *See Office Action* p. 15. For this, Andre is relied on. Neither Andre nor Zaleski cure the deficiencies of Whiting-O'Keefe or Pollack. As previously discussed, Andre is directed to a work score assigned by a schedule evaluator based on employee schedule changes. *See Andre* at col. 5, Lines 35-39. The schedule generated by addition or removal of a patient depends on the work performed by the changed employee. *Id.* at col. 5, Lines 49-58. It is respectfully submitted that a work score generated based on an employee's schedule is distinct from a work score that "is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider," as recited in independent claim 40.

Thus, Applicants respectfully submit that Whiting-O'Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 40. Therefore, a *prima facie* case of obviousness has not been established for independent claim 40. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 40 under 35 U.S.C. § 103(a). Claim 40 is believed to be in condition for allowance and such favorable action is respectfully requested.

C) The rejection of claims 6 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O'Keefe, in view of Pollack, in view of Andre, in view of Zaleski, in view of Richardson should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.

- 1) Has the Office established a *prima facie* case of obviousness for claim 6 when the combination of cited references fail to teach or suggest at least one feature of independent claim 1?

The Office has not established a *prima facie* case of obviousness for claim 6 because the combination of cited references does not teach at least one feature of independent

claim 1, from which claim 6 depends. Whiting-O'Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest "calculating, with a computer processor, a work score for the particular patient using the satisfied work factors," as recited in claim 1. Dependent claim 6 further defines novel features of independent claim 1. Richardson does not cure the deficiencies of Whiting-O'Keefe, Pollack, Andre, and Zaleski discussed above. Richardson is generally directed to determining the severity of patient illnesses based on monitored predetermined parameters. *Richardson* at col. 6, lines 47-49. Accordingly, for at least the reasons set forth above with respect to independent claim 1, dependent claim 6 is believed to be in condition for allowance by virtue of its dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claim 6 is respectfully requested.

- 2) Has the Office established a *prima facie* case of obviousness for claim 18 when the combination of cited references fail to teach or suggest at least one feature of independent claim 12?

The Office has not established a *prima facie* case of obviousness for claim 18 because the combination of cited references does not teach at least one feature of independent claim 12, from which claim 18 depends. Whiting-O'Keefe, Pollack, Andre, and Zaleski, either alone or in combination, fail to teach or suggest "calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population," and "calculating, with the processor, a work score for each of the one or more patients in the patient population using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve each of the one or more patients," as recited in claim 12. Dependent claim 18 further defines novel features of independent claim 12. Richardson does not cure the deficiencies of Whiting-O'Keefe, Pollack, Andre and Zaleski

discussed above. Accordingly, for at least the reasons set forth above with respect to independent claim 12, dependent claim 18 is believed to be in condition for allowance by virtue of its dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claim 18 is respectfully requested.

D) The rejection of claim 39 and 49 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Pollack, in view of Andre, in view of Zaleski, in view of Richardson should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.

The Office has not established a *prima facie* case of obviousness for claim 39 because the combination of cited references does not teach at least one feature of independent claim 39. Whiting-O’Keefe, Pollack, Andre, Zaleski, and Richardson, either alone or in combination, fail to teach or suggest “utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time,” “utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time,” and “trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system,” as recited in claim 39.

As previously indicated in the Summary of Claimed Subject Matter, independent claim 39 recites one or more recordable computer-storage media having computer-executable instructions embodied thereon that when executed by a computing system having a processor and memory, cause the computing system to perform a method. The method includes “obtaining patient data for particular patient at a first point in time directly from a primary clinical

information system,” “determining a type of patient population that the particular patient is a member of,” “accessing work factors for the type of patient population,” “comparing the patient data for the particular patient to work factors to determine which work factors are satisfied,” “accessing weighted values for each satisfied work factor,” “assigning each satisfied work factor with a weighted score,” “utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time,” “storing the first instance of a work score,” “obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system,” “determining a type of patient population that the patient is a member of,” “accessing work factors for the type of patient population,” “comparing the patient data for the particular patient to work factors to determine which work factors are satisfied,” “accessing weighted values for each satisfied work factor,” “assigning each satisfied work factor with a weighted score,” “utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time,” “storing the second instance of a work score,” and “trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system.”

Claim 39 recites features similar to some of the features discussed above for claim 1 and is patentable over the art of record for at least the same reasons. Richardson fails to cure the deficiencies of Whiting-O’Keefe, Pollack, Andre, and Zaleski discussed above.

Additionally, Applicants maintain that Andre fails to teach or suggest “wherein the first instance of a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time.” Andre generates a score associated with a change in employee schedule, such as a change from one employee to a second employee. For example, Andre compares the amount of work performed by a first employee with the amount of work performed by a second employee, to evaluate a schedule change from the first to the second employee. There is no reference in Andre to *a work score* that is calculated using the measure of *personnel hours anticipated for a particular patient* at a first point in time. By contrast, the work score of claim 39 is calculated based on weighted values assigned to satisfied work factors, where the work factors are specific to a particular patient population.

Applicants respectfully submit that the number of personnel hours in Andre does not directly correlate to a work score for a particular patient, as in claim 39. Instead, there may be several different healthcare providers whose varying personnel hours may contribute to satisfying one or more work factors for a patient in a particular population. For example, work performed by four nurses and three doctors for a single patient in a particular patient population may all contribute to the overall calculation of a work score for that particular patient. While the Andre reference adjusts assigned “work” based on employee schedule changes, the Andre reference does not evaluate a first or second instance of work scores which measure “personnel hours anticipated for [a] particular patient.”

Thus, Applicants respectfully submit that Whiting-O’Keefe, Pollack, Andre Zaleski and Richardson, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 39. Therefore, a *prima facie* case of obviousness has not been established for independent claim 39. Accordingly, Applicants respectfully request withdrawal

of the rejection of claim 39 under 35 U.S.C. § 103(a). Claim 39 is believed to be in condition for allowance and such favorable action is respectfully requested.

Dependent claim 49 depends directly from independent claim 39. As such, it is respectfully submitted that Whiting-O’Keefe, Pollack, Andre, Zaleski, and Richardson fail to teach or suggest, either expressly or inherently, each and every element of claim 49 for at least the above-cited reasons. Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of this claim as well. Claim 49 is believed to be in condition for allowance and such favorable action is respectfully requested.

E) The rejection of claim 41 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view Pollack, in view of Zaleski should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.

The Office has not established a *prima facie* case of obviousness for claim 41 because the combination of cited references does not teach at least one feature of independent claim 41. Whiting-O’Keefe, Pollack, and Zaleski, either alone or in combination, fail to teach or suggest “a work calculation module for calculating a work score for one or more patients,” as recited in claim 41.

As previously indicated in the Summary of Claimed Subject Matter, independent claim 41 recites a computerized system for optimizing personnel planning in a healthcare organization. The system includes “a work calculation module for calculating a work score for one or more patients,” “a staff scheduling and staffing module for receiving input from the work calculation module about prospective workload and identifying healthcare personnel positions to be filled,” “a role management module for managing the roles and information regarding personnel,” “a workforce outcomes module for determining how effectively healthcare personnel have been used,” “a demand forecast module for forecasting the volume and type of patients who

will present, communicating information regarding a forecasted demand generated by the demand forecast module to the work calculation module, and communicating information to the staff scheduling and staffing module to help determine anticipated clinical demand,” and “a resource dashboard module for receiving information regarding staff scheduling from the staff scheduling and staffing module, receiving work calculations for the patient population from the work calculation module, and displaying information regarding personnel and patients.”

Independent claim 41 recites features similar to some of the features discussed above for claim 1 and is patentable over the art of record for at least the same reasons. Zaleski does not cure the deficiencies of Whiting-O’Keefe and Pollack discussed above with reference to independent claim 1. Additionally, the Non-Final Office Action states that “System claim 41 repeats the subject matter of method claim 1 respectively, as a system rather than a series of steps. As the underlying process of claim 1 has been shown to be fully disclosed by the teachings of Whiting-O’Keefe in the above rejection of claim 1, it is readily apparent that the limitations disclosed by Whiting-O’Keefe include the apparatus to perform these functions.” *Office Action* at p. 23. It is respectfully submitted that the Whiting-O’Keefe reference not teach or suggest “calculating a work score for one or more patients,” as in independent claim 41. Whiting-O’Keefe discloses estimating “charges” for “episodes of care for identified primary and collateral illnesses.” *See Whiting-O’Keefe reference* at Col. 7, lines 53-54. These charge estimates depend on a table of regression coefficients calculated from healthcare encounter records. *Id.* at Col. 8, lines 1-7. *Whiting-O’Keefe reference* at Col. 8, lines 21-24 (emphasis added). Additionally, the Whiting-O’Keefe reference does not disclose calculating a work score by “determining a type of patient population that the particular patient is a member of,” “accessing work factors for the type of patient population,” “comparing the data for the

particular patient to the work factors to determine which factors are satisfied,” “accessing a weighted value for each satisfied work factor,” “assigning each satisfied work factor with a weighted score,” “calculating, with a computer processor, a work score for the particular patient using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient,” as recited in independent claim 1. As such, it is respectfully submitted that the Whiting-O’Keefe reference does not implicitly disclose some or all of the system steps of amended independent claim 41 by virtue of its relation to the method steps of independent claim 1.

It is respectfully submitted that Pollack and Zaleski do not cure the deficiencies of Whiting-O’Keefe as the references also do not disclose “a work calculation module for calculating a work score for one or more patients.”

Thus, Applicants respectfully submit that Whiting-O’Keefe, Pollack, and Zaleski, either alone or in combination, fail to teach or suggest all of the limitations of independent claim 41. Therefore, a *prima facie* case of obviousness has not been established for independent claim 41. Accordingly, Applicants respectfully request withdrawal of the rejection of claim 41 under 35 U.S.C. § 103(a). Claim 41 is believed to be in condition for allowance and such favorable action is respectfully requested

F) The rejection of claims 42 and 43 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.

The Office has not established a *prima facie* case of obviousness for claims 42 and 43 because the combination of cited references does not teach at least one feature of independent claim 41, from which claims 42 and 43 depend. Whiting-O’Keefe, Zaleski, and Ross, either alone or in combination, fail to teach or suggest “a work calculation module for

calculating a work score for one or more patients,” as recited in claim 41. Dependent claims 42 and 43 further define novel features of independent claim 41. Ross does not cure the deficiencies of Whiting-O’Keefe, Pollack, and Zaleski discussed above with reference to independent claim 41. Accordingly, for at least the reasons set forth above with respect to independent claim 41, dependent claims 42 and 43 are believed to be in condition for allowance by virtue of their dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claims 42 and 43 is respectfully requested.

- G) The rejection of claims 44 and 45 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in view of Richardson should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.**

The Office has not established a *prima facie* case of obviousness for claims 44 and 45 because the combination of cited references does not teach at least one feature of independent claim 41, from which claims 44 and 45 depend. Whiting-O’Keefe, Zaleski, Ross, and Richardson, either alone or in combination, fail to teach or suggest “a work calculation module for calculating a work score for one or more patients,” as recited in claim 41. Dependent claims 44 and 45 further define novel features of independent claim 41. Ross and Richardson do not cure the deficiencies of Whiting-O’Keefe, Pollack, and Zaleski discussed above with reference to independent claim 41. Accordingly, for at least the reasons set forth above with respect to independent claim 41, dependent claims 44 and 45 are believed to be in condition for allowance by virtue of their dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claims 44 and 45 is respectfully requested.

- H) The rejection of claims 46 and 47 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in view of Richardson, in view of Pollack should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.**

The Office has not established a *prima facie* case of obviousness for claims 46 and 47 because the combination of cited references does not teach at least one feature of independent claim 41, from which claims 46 and 47 depend. Whiting-O’Keefe, Zaleski, Ross, Richardson, and Pollack, either alone or in combination, fail to teach or suggest “a work calculation module for calculating a work score for one or more patients,” as recited in claim 41. Dependent claims 46 and 47 further define novel features of independent claim 41. Ross and Richardson do not cure the deficiencies of Whiting-O’Keefe, Pollack, and Zaleski discussed above with reference to independent claim 41. Accordingly, for at least the reasons set forth above with respect to independent claim 41, dependent claims 46 and 47 are believed to be in condition for allowance by virtue of their dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claims 46 and 47 is respectfully requested.

- I) The rejection of claim 48 under 35 U.S.C. § 103(a) as being unpatentable over Whiting-O’Keefe, in view of Zaleski, in view of Ross, in view of Richardson, in view of Pollack, in view of Brandt should be reversed because the Examiner failed to establish a *prima facie* case of obviousness.**

The Office has not established a *prima facie* case of obviousness for claim 48 because the combination of cited references does not teach at least one feature of independent claim 41, from which claim 48 depends. Whiting-O’Keefe, Zaleski, Ross, Richardson, Pollack, either alone or in combination, fail to teach or suggest “a work calculation module for calculating a work score for one or more patients,” as recited in claim 41. Dependent claims 44 and 45 further define novel features of independent claim 41. Ross and Richardson do not cure the

deficiencies of Whiting-O'Keefe, Pollack, and Zaleski discussed above with reference to independent claim 41. Accordingly, for at least the reasons set forth above with respect to independent claim 41, dependent claims 44 and 45 are believed to be in condition for allowance by virtue of their dependency, and such favorable action is respectfully requested. Withdrawal of the 35 U.S.C. § 103(a) rejection of dependent claims 44 and 45 is respectfully requested.

J) Conclusion

Because Whiting-O'Keefe, Pollack, Andre, Zaleski, Richardson, Ross, and Brandt do not render obvious claims 1-2, 5-7, 9-24, and 39-49 for at least the reasons cited hereinabove, Appellants respectfully request that the rejection of the claims be reversed and the claims allowed.

Respectfully submitted,

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CLAIMS APPENDIX

1. A computer-implemented method for determining an amount of work provided by a health care provider for a particular patient, the method comprising:

obtaining patient data for the particular patient directly from a primary clinical information system;

determining a type of patient population that the particular patient is a member of;

accessing work factors for the type of patient population;

comparing the data for the particular patient to the work factors to determine which factors are satisfied;

accessing a weighted value for each satisfied work factor;

assigning each satisfied work factor with a weighted score;

calculating, with a computer processor, a work score for the particular patient using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve the particular patient; and

storing the particular patient's work score.

2. The method of claim 1, further comprising:

receiving a request for a particular patient's work score

3. (Cancelled)

4. (Cancelled)

5. The method of claim 1, wherein each work factor has one or more assigned weighted value.

6. The method of claim 1, further comprising:
adjusting the weighted value of one or more work factors triggered by the patient data based on rules.

7. The method of claim 6, further comprising:
obtaining rules for generating a work score for the particular patient.

8. (Cancelled)

9. The method of claim 1, wherein the patient data is one of outstanding orders, outstanding tasks, complete orders, completed tasks, services provided by personnel over a period of time, scheduled procedures, scheduled outpatient care, assigned tasks, assigned orders, assessment, tasks, services typically delivered for a specific patient or patient type and combinations thereof.

10. The method of claim 1, wherein the work score is prospective.

11. The method of claim 1, where the work score is retrospective.

12. One or more computer-storage media having computer-executable instructions embodied thereon, that when executed by a computing system having a processor and memory, cause the computing system to perform a method, the method comprising:

obtaining patient data for one or more patients in a patient population directly from a primary clinical information system;

determining a type of patient population that each of the one or more patients are a member of;

accessing work factors for the type of patient population;

comparing the patient data for each of the one or more patients to the work factors to determine which factors are satisfied;

accessing a weighted value for each satisfied work factor;

assigning each satisfied work factor with a weighted score; and

calculating, with the processor, a work score for each of the one or more patients in the patient population using the satisfied work factors, wherein the work score indicates a quantity of personnel hours anticipated to serve each of the one or more patients;

storing one or more work scores for the one or more patients in the patient population; and

calculating staffing needs for the patient population based on the work scores obtained for the one or more patients in the patient population.

13. The media of claim 12, wherein the method further comprises:

receiving a request for the work score for a particular patient in the patient population.

14. The media of claim 13, wherein the method further comprises:

determining the patients in the population.

15. The media of claim 14, wherein the method further comprises:

obtaining work factors for the population.

16. The media of claim 15, wherein the method further comprises:
determining which of the factors are triggered by the data for the particular patient in the population.
17. The media of claim 15, wherein each factor has an assigned value.
18. The media of claim 17, wherein the method further comprises:
adjusting the value of one or more factors triggered by the data.
19. The media of claim 17, wherein the method further comprises:
obtaining rules for generating a work score for each a particular patient in the population.
20. The media of claim 19, wherein the method further comprises:
utilizing the rules and values of factors triggered by the data to generate a work score for the particular patient in the patient population.
21. The media of claim 20, wherein the method further comprises:
accumulating the work scores for all patients in the population.
22. The media of claim 21, wherein the method further comprises:
obtaining staffing standards for the population.
23. The media of claim 22, wherein the method further comprises;
calculating staffing needs based on the work scores obtained for the patients in the patient population and the staffing standards for the population.

24. The media of claim 12, wherein the data is one of outstanding orders, outstanding tasks, completed orders, completed tasks, services provided by personnel over a period of time, scheduled procedures, scheduled outpatient care, assigned tasks, assigned orders, assessments, tasks, services typically delivered for a specific patient or patient type and combinations thereof.

25-38. (Canceled).

39. One or more recordable computer-storage media having computer-executable instructions embodied thereon that when executed by a computing system having a processor and memory, cause the computing system to perform a method, the method comprising:

obtaining patient data for particular patient at a first point in time directly from a primary clinical information system;

determining a type of patient population that the particular patient is a member of;

accessing work factors for the type of patient population;

comparing the patient data for the particular patient to work factors to determine which work factors are satisfied;

accessing weighted values for each satisfied work factor;

assigning each satisfied work factor with a weighted score;

utilizing the weighted score to calculate a first instance of a work score for the particular patient using the satisfied work factors, wherein the first instance of

a work score includes a measure of personnel hours anticipated for the particular patient at a first point in time;

storing the first instance of a work score;

obtaining patient data for the particular patient at a second point in time directly from a primary clinical information system;

determining a type of patient population that the patient is a member of;

accessing work factors for the type of patient population;

comparing the patient data for the particular patient to work factors to determine which work factors are satisfied;

accessing weighted values for each satisfied work factor;

assigning each satisfied work factor with a weighted score;

utilizing the weighted score to calculate a second instance of a work score for the particular patient using the satisfied work factors, wherein the second instance of a work score includes a measure of personnel hours anticipated for the particular patient at a second point in time;

storing the second instance of a work score; and

trending the work score for the particular patient, wherein the first instance of a work score is compared to a second instance of a work score for the particular patient based on the patient data in the primary clinical information system.

40. A computer-implemented method for determining the amount of healthcare provider work for a population of patients, the method comprising:

calculating, with a computer processor, a work score for each patient in a patient population utilizing data obtained directly from a primary clinical

information system, wherein the work score is a quantity of personnel hours required to serve each patient in the patient population by a healthcare provider;

storing the work score for each patient; and

calculating staffing needs for the patient population based on the work scores obtained for each patient in the patient population.

41. A computerized system for optimizing personnel planning in a healthcare organization, the system comprising:

a work calculation module for calculating a work score for one or more patients;

a staff scheduling and staffing module for receiving input from the work calculation module about prospective workload and identifying healthcare personnel positions to be filled;

a role management module for managing the roles and information regarding personnel;

a workforce outcomes module for determining how effectively healthcare personnel have been used;

a demand forecast module for forecasting the volume and type of patients who will present, communicating information regarding a forecasted demand generated by the demand forecast module to the work calculation module, and communicating information to the staff scheduling and staffing module to help determine anticipated clinical demand; and

a resource dashboard module for receiving information regarding staff scheduling from the staff scheduling and staffing module, receiving work

calculations for the patient population from the work calculation module, and displaying information regarding personnel and patients.

42. The system of claim 41, further comprising:

an enterprise scheduling module for identifying information regarding appointments for outpatient procedures.

43. The system of claim 42, further comprising:

a shift assignment module for displaying one of the capacity, availability and combinations thereof of personnel currently working.

44. The system of claim 43, further comprising:

a registration module for identifying and tracking patient registration census and activity.

45. The system for claim 44, further comprising:

a medical records module for capturing and storing patient data.

46. The system of claim 45, further comprising:

a patient severity module for providing information regarding the status and conditions of patients.

47. The system of claim 46, further comprising:

a departmental tracking module for tracking patients through different departments.

48. The system of claim 47, further comprising:

a personal work queue module for tracking and displaying work to be performed by individual personnel.

49. The computer-storage media of claim 39 wherein trending the work score for the particular patient further comprises more than two instances of a work score for the particular patient based on the patient's data in the primary clinical information system.

EVIDENCE APPENDIX

Pursuant to 37 C.F.R. § 41.37(c)(1)(ix), submitted herewith are copies of any evidence submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132 or any other evidence entered by the Examiner and relied upon by Appellant in the appeal.

NONE

RELATED PROCEEDINGS APPENDIX

Pursuant to 37 C.F.R. § 41.37(c)(1)(x), submitted herewith are copies of decisions rendered by a court or the Board in any proceeding identified in Section II pursuant to 37 C.F.R. § 41.37(c)(1)(ii).

NONE